

ZXMN3B04N8

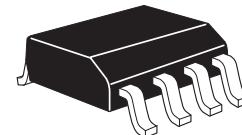
30V N-CHANNEL ENHANCEMENT MODE MOSFET 2.5V GATE DRIVE

SUMMARY

$V_{(BR)DSS} = 30V$: $R_{DS(on)} = 0.025\Omega$; $I_D = 8.9A$

DESCRIPTION

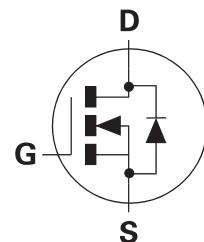
This new generation of Trench MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



FEATURES

SO8

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

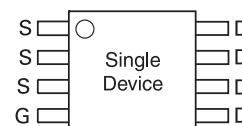


APPLICATIONS

- DC - DC converters
- Power management functions
- Disconnect switches
- Motor control

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN3B04N8TA	7"	12mm	500 units
ZXMN3B04N8TC	13"	12mm	2500 units



Top View

DEVICE MARKING

- ZXMN
3B04

ZXMN3B04N8

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V _{DSS}	30	V
Gate source voltage	V _{GS}	±12	V
Continuous drain current @ V _{GS} =4.5V; T _A =25°C (b) @ V _{GS} =4.5V; T _A =70°C (b) @ V _{GS} =4.5V; T _A =25°C (a)	I _D	8.9 7.3 7.2	A A A
Pulsed drain current (c)	I _{DM}	45	A
Continuous source current (body diode) (b)	I _S	4.5	A
Pulsed source current (body diode) (c)	I _{SM}	45	A
Power dissipation at T _A =25°C (a)	P _D	2	W
Linear derating factor		16	mW/°C
Power dissipation at T _A =25°C (b)	P _D	3	W
Linear derating factor		24	mW/°C
Operating and storage temperature range	T _j ;T _{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient (a)	R _{θJA}	62.5	°C/W
Junction to ambient (b)	R _{θJA}	41.4	°C/W

NOTES

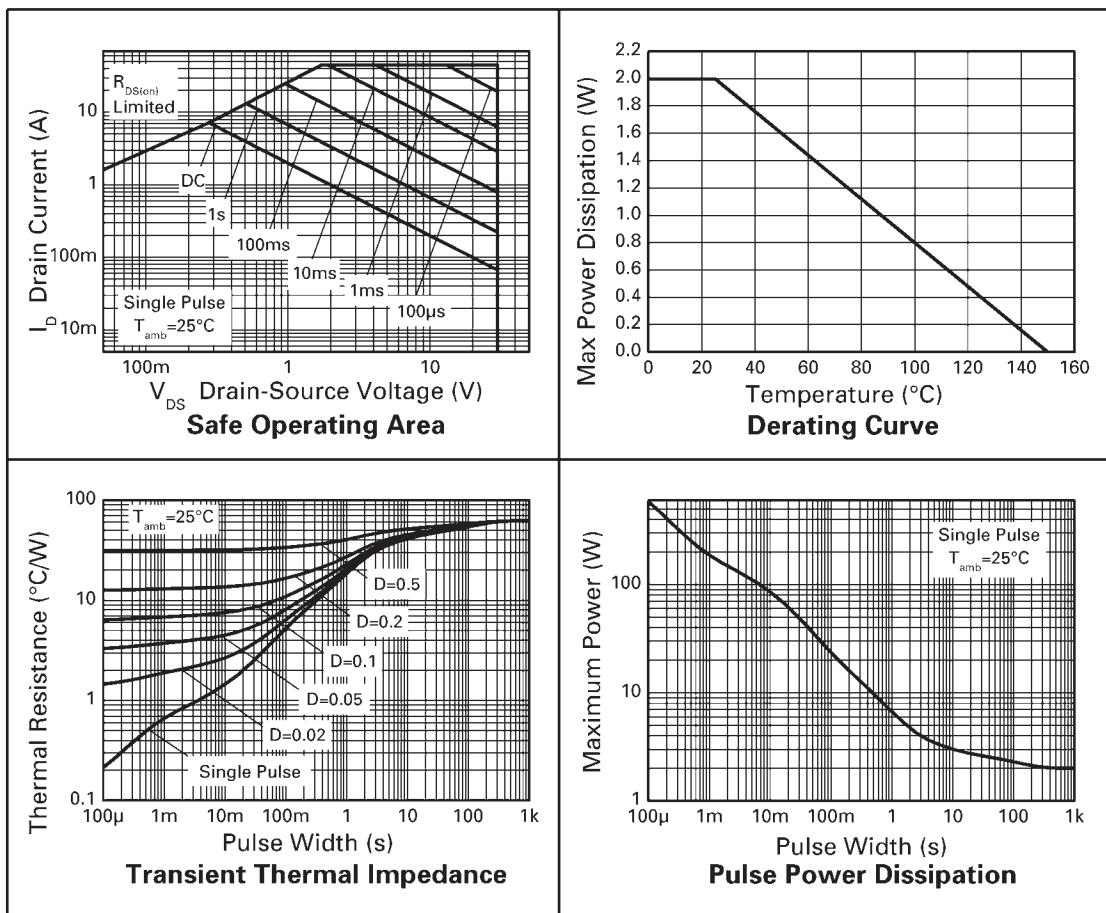
(a) For a device surface mounted on 50mm x 50mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.

(b) For a device surface mounted on FR4 PCB measured at t ≤ 10 sec.

(c) Repetitive rating - 25mm x 25mm FR4 PCB, D=0.02, pulse width 300μs - pulse width limited by maximum junction temperature.

ZXMN3B04N8

CHARACTERISTICS



ISSUE 2 - MAY 2004

ZXMN3B04N8

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ C$ unless otherwise stated)

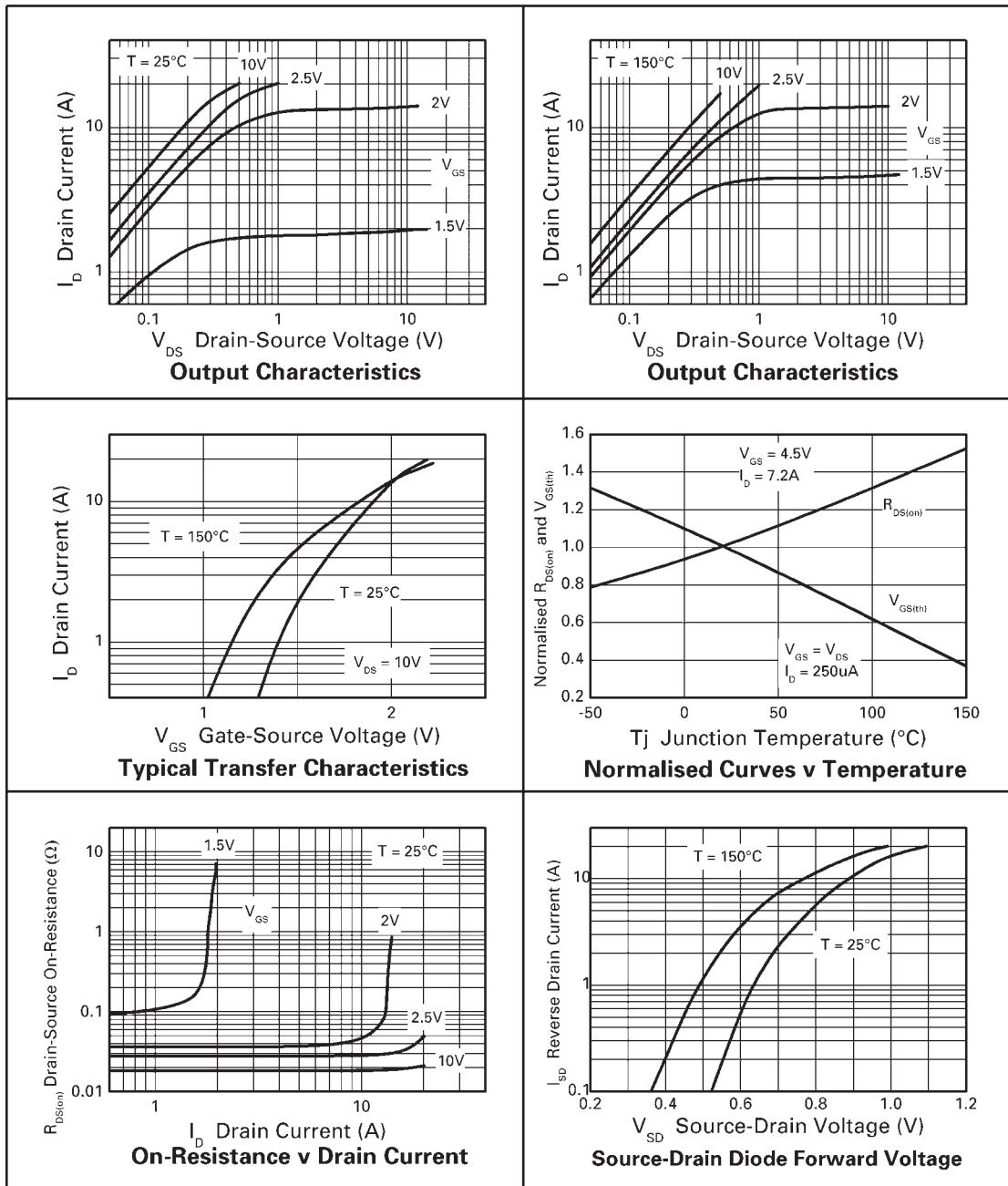
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-source breakdown voltage	$V_{(BR)DSS}$	30			V	$I_D=250\mu A, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}			0.5	μA	$V_{DS}=30V, V_{GS}=0V$
Gate-body leakage	I_{GSS}			100	nA	$V_{GS}=\pm 12V, V_{DS}=0V$
Gate-source threshold voltage	$V_{GS(th)}$	0.7			V	$I_D=250\mu A, V_{DS}=V_{GS}$
Static drain-source on-state resistance ⁽¹⁾	$R_{DS(on)}$		0.021 0.028	0.025 0.040	Ω	$V_{GS}=4.5V, I_D=7.2A$ $V_{GS}=2.5V, I_D=5.7A$
Forward transconductance ^{(1) (3)}	g_{fs}		24		S	$V_{DS}=15V, I_D=7.2A$
DYNAMIC ⁽³⁾						
Input capacitance	C_{iss}		2480		pF	$V_{DS}=15V, V_{GS}=0V,$
Output capacitance	C_{oss}		318		pF	$f=1MHz$
Reverse transfer capacitance	C_{rss}		184		pF	
SWITCHING ^{(2) (3)}						
Turn-on delay time	$t_{d(on)}$		9		ns	$V_{DD}=15V, V_{GS}=4.5V$
Rise time	t_r		11.5		ns	$I_D=1A$
Turn-off delay time	$t_{d(off)}$		40		ns	$R_G \geq 6.0\Omega,$
Fall time	t_f		16.6		ns	
Total gate charge	Q_g		23.1		nC	$V_{DS}=15V, V_{GS}=4.5V,$
Gate-source charge	Q_{gs}		4.9		nC	$I_D=7.2A$
Gate-drain charge	Q_{gd}		6.2		nC	
SOURCE-DRAIN DIODE						
Diode forward voltage ⁽¹⁾	V_{SD}		0.85	0.95	V	$T_J=25^\circ C, I_S=8A,$ $V_{GS}=0V$
Reverse recovery time ⁽³⁾	t_{rr}		17.9		ns	$T_J=25^\circ C, I_F=3.2A,$
Reverse recovery charge ⁽³⁾	Q_{rr}		10		nC	$dI/dt= 100A/\mu s$

NOTES

- (1) Measured under pulsed conditions. Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

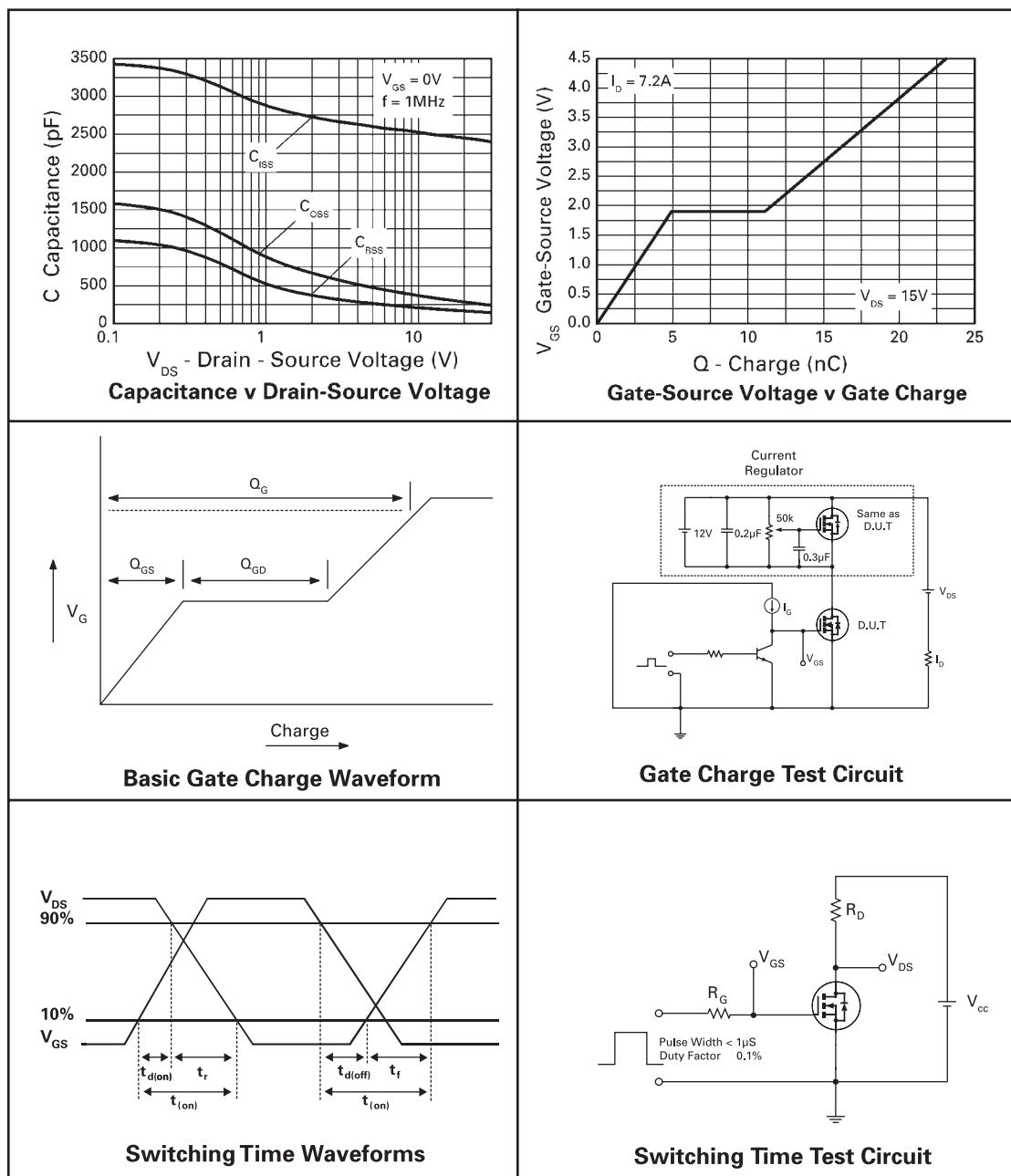
ZXMN3B04N8

TYPICAL CHARACTERISTICS



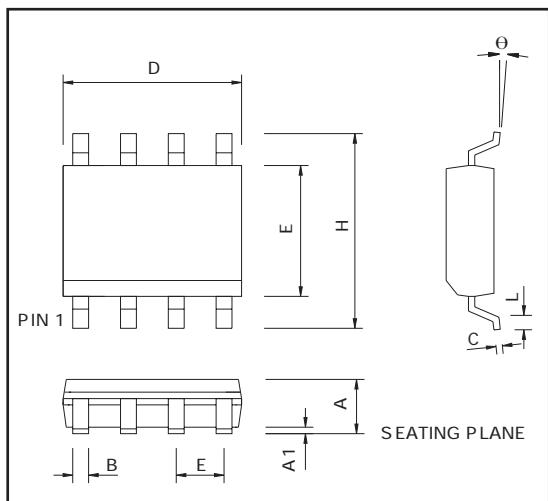
ZXMN3B04N8

TYPICAL CHARACTERISTICS



ZXMN3B04N8

PACKAGE OUTLINE



Controlling dimensions are in inches. Approximate conversions are given in millimeters

PACKAGE DIMENSIONS

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.053	0.069	1.35	1.75	e	0.050	BSC	1.27	BSC
A1	0.004	0.010	0.10	0.25	b	0.013	0.020	0.33	0.51
D	0.189	0.197	4.80	5.00	c	0.008	0.010	0.19	0.25
H	0.228	0.244	5.80	6.20	Θ	0°	8°	0°	8°
E	0.150	0.157	3.80	4.00	h	0.010	0.020	0.25	0.50
L	0.016	0.050	0.40	1.27					

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ISSUE 2 - MAY 2004